

REMARKS

Applicants have amended claims 1, 13, and 19 to more particularly point out and distinctly claim embodiments of the invention with respect to conventional second-surface disks. In that regard, Applicants note the discussion in the background section with respect to prior art second-surface optical disks. In a second-surface optical disk (as set forth on pages 4 and 5, for example), the information layer is covered by a relatively thick substrate layer (typically polycarbonate). The thickness of the substrate acts to defocus dust, scratches, and other imperfections on its surface with respect to the underlying information layer. Consider, for example, the Masuhara reference (USP 6,440,333), presently cited against the pending claims. As seen in Figure 3 of Masuhara, the information layer 7 is covered by a relatively thick (disclosed as 0.3 mm in Col. 10, line 2) transparent layer 5. This thickness (300 microns) is many wavelengths in thickness for a typical laser wavelength. For example, red laser light is 650 nm in wavelength such that the transparent layer 5 would be over 300 wavelengths in thickness. Such a thickness is comparable to the 500 wavelength thickness discussed by the Applicants on page 5, line 9 and hence has a substantial defocusing effect. In other words, dust and such on the surface of layer 5 is defocused with respect to a laser beam reading the underlying information layer.

As set forth by the Applicants on page 5 and 6, although a second-surface disk enjoys these defocusing effects, there are drawbacks: optical aberrations and increased optical path length. Both these drawbacks are deleterious as you reduce the feature size and optical player/disk size. To provide a high-density yet miniaturizable optical disk, the present assignee has developed a first-surface optical disk as set forth, for example, in

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U.S. Ser. No. 09/560,781. In such a first-surface optical disk, the information layer is not covered by a thick defocusing layer. Instead, as seen in Figure 10, the information layer 900 is merely covered by a thin dielectric layer 1000. For example, layer 1000 may have a thickness of between 40 and 80 nm as set forth on page 16, line 30. For a laser beam incident from above on the disk shown in Figure 10, the information layer is the same surface optically as the surface of dielectric layer 1000 – there is no defocusing effect. Thus, the “first-surface” denotation of the optical disk shown in Figure 10.

Although the present assignee had pushed the state of the art with their innovative first-surface optical disk, they experienced problems in that it was difficult for an optical player to distinguish the grooves. It was through the disclosed mother stamper manufacture that the Applicants were able to provide a first-surface disk wherein the features could be optically distinguished in an enhanced fashion. To reflect the first surface nature of their invention, claim 1 has been amended to include the act of “depositing a dielectric layer over the phase-change material to form the first-surface optical disk, the first-surface optical disk being distinguished from second-surface optical disks by the absence of a defocusing layer over the dielectric layer.” Support for this act is as set forth above such that no new matter is added.

Such a disk is startlingly different from the second-surface optical disk shown in Masuhara. Masuhara thus provides no suggestion or teaching for the manufacture of such a disk. Moreover, the Pan reference (USP 4,960,680) provides nothing further in that regard. Accordingly, claim 1 is patentable over the combination of these references.

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In light of the amendment to claim 1, claim 12 has been cancelled and claim 13 amended accordingly. Because claims 2-11 and 13-18 depend either directly or indirectly upon claim 1, they are patentable for at least the same reasons.

Claim 19 has been amended as discussed with respect to claim 1 and is thus patentable over the cited prior art for at least the same reasons. Because claims 20 through 26 depend either directly or indirectly upon claim 19, they are patentable for at least the same reasons.

Claims 27 through 31 are cancelled, thereby mooted their rejections.

CONCLUSION

For the above reasons, claims 1-11 and 13-26 are in condition for allowance and allowance of the application is hereby solicited.

If the Examiner has any questions or concerns, a telephone call to the undersigned at (949) 752-7040 is welcomed and encouraged.


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Linda Bolter

January 27, 2005
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